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| FORM PTO-1300<br>(REV. 11-2000)   |  | U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE |  | ATTORNEY'S DOCKET NUMBER<br>99787-1051  |  |
| TRANSMITTAL LETTER TO THE UNITED STATES<br>DESIGNATED/ELECTED OFFICE (DO/EO/US)<br>CONCERNING A FILING UNDER 35 U.S.C. 371  |  |   |  | U.S. APPLICATION NO. (If known, see 37 CFR 2.5)<br>To be assigned<br><b>09/744057</b> |  |
| INTERNATIONAL APPLICATION NO.<br>PCT/JP99/03827   |  | INTERNATIONAL FILING DATE<br>15 July 1999               |  | PRIORITY DATE CLAIMED<br>17 July 1998   |  |
| TITLE OF INVENTION<br>ELECTRONIC APPLIANCE  |  |   |  |   |  |
| APPLICANT(S) FOR DO/EO/US<br>Tatsuhiko MIZUKAMI et al   |  |   |  |   |  |
| Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:   |  |   |  |   |  |
| <ol style="list-style-type: none"><li>1. <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a filing under 35 U.S.C. 371.</li><li>2. <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a filing under 35 U.S.C. 371.</li><li>3. <input type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.</li><li>4. <input type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31).</li><li>5. <input type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))<ol style="list-style-type: none"><li>a. <input type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau).</li><li>b. <input checked="" type="checkbox"/> has been communicated by the International Bureau.</li><li>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</li></ol></li><li>6. <input checked="" type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2))<ol style="list-style-type: none"><li>a. <input checked="" type="checkbox"/> is attached hereto.</li><li>b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4).</li></ol></li><li>7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))<ol style="list-style-type: none"><li>a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau).</li><li>b. <input type="checkbox"/> have been communicated by the International Bureau.</li><li>c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.</li><li>d. <input checked="" type="checkbox"/> have not been made and will not be made.</li></ol></li><li>8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).</li><li>9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).</li><li>10. <input type="checkbox"/> An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</li></ol> |  |   |  |   |  |
| Items 11 to 20 below concern document(s) or information included:   |  |   |  |   |  |
| <ol style="list-style-type: none"><li>11. <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.</li><li>12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.</li><li>13. <input type="checkbox"/> A <b>FIRST</b> preliminary amendment.</li><li>14. <input type="checkbox"/> A <b>SECOND</b> or <b>SUBSEQUENT</b> preliminary amendment.</li><li>15. <input type="checkbox"/> A substitute specification.</li><li>16. <input type="checkbox"/> A change of power of attorney and/or address letter.</li><li>17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.</li><li>18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4).</li><li>19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).</li><li>20. <input checked="" type="checkbox"/> Other items or information:<br/>International Search Report<br/>International Publication WO00/04731<br/>Certificate of Express Mailing<br/>Return Postcard</li></ol>   |  |   |  |   |  |



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|--|--|---|--|--|--|
| U.S. APPLICATION NO. (if known) <b>09/744057</b> |  | INTERNATIONAL APPLICATION NO.<br>PCT/JP99/03827 |  | ATTORNEY'S DOCKET NUMBER<br>99787-1051 |  |
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|   |              |              |           |  |    |
|---|--------------|--------------|-----------|--|----|
| 21. <input checked="" type="checkbox"/> The following fees are submitted:<br><b>BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):</b><br>Neither international preliminary examination fee (37 CFR 1.482)<br>nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO<br>and International Search Report not prepared by the EPO or JPO. .... \$1000.00<br><br>International preliminary examination fee (37 CFR 1.482) not paid to<br>USPTO but International Search Report prepared by the EPO or JPO ..... \$860.00<br><br>International preliminary examination fee (37 CFR 1.482) not paid to USPTO<br>but international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... \$710.00<br><br>International preliminary examination fee (37 CFR 1.482) paid to USPTO<br>but all claims did not satisfy provisions of PCT Article 33(1)-(4) ..... \$690.00<br><br>International preliminary examination fee (37 CFR 1.482) paid to USPTO<br>and all claims satisfied provisions of PCT Article 33(1)-(4) ..... \$100.00<br><br><b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b> |              |              |           | <b>CALCULATIONS PTO USE ONLY</b><br><br><br><br><br><br><br><br><br><br><div style="display: flex; justify-content: space-between;"> <span>\$ 860.00</span> <span></span> </div> |    |
| Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30<br>months from the earliest claimed priority date (37 CFR 1.492(e)).  |              |              |           | \$   |    |
| CLAIMS  | NUMBER FILED | NUMBER EXTRA | RATE      | \$   |    |
| Total claims  | 4 - 20 =     | 0            | x \$18.00 | \$ 0   |    |
| Independent claims  | 2 - 3 =      | 0            | x \$80.00 | \$ 0   |    |
| MULTIPLE DEPENDENT CLAIM(S) (if applicable)   |              |              |           | + \$270.00   |    |
| <b>TOTAL OF ABOVE CALCULATIONS =</b>  |              |              |           | \$ 860.00  |    |
| <input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above<br>are reduced by 1/2.   |              |              |           | \$   |    |
| <b>SUBTOTAL =</b>   |              |              |           | \$ 860.00  |    |
| Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30<br>months from the earliest claimed priority date (37 CFR 1.492(f)).   |              |              |           | \$   |    |
| <b>TOTAL NATIONAL FEE =</b>   |              |              |           | \$ 860.00  |    |
| Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be<br>accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +   |              |              |           | \$   |    |
| <b>TOTAL FEES ENCLOSED =</b>  |              |              |           | \$ 860.00  |    |
|   |              |              |           | Amount to be<br>refunded:  | \$ |
|   |              |              |           | charged:   | \$ |

a. ☒ A check in the amount of \$ 860.00 to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \$ \_\_\_\_\_ to cover the above fees.  
 A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any  
 overpayment to Deposit Account No. 02-0410. A duplicate copy of this sheet is enclosed.

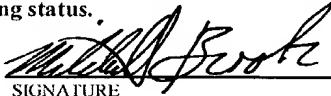
d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card  
 information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

**NOTE:** Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR  
 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO

Mitchell P. Brook  
 c/o Baker & McKenzie  
 101 West Broadway, 12th Floor  
 San Diego, California 92101  
 (619) 236-1441

  
 SIGNATURE  
 Mitchell P. Brook  


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 NAME  
 32,967  


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 REGISTRATION NUMBER

8/PED

09/744057

JC07 Rec'd PCT/PTO 16 JAN 2001

## DESCRIPTION

ELECTRONIC APPLIANCE

5

## Technical Field

The present invention relates to an electronic appliance which receives a message from a base station.

## Background Art

10

In recent years, so-called pagers have appeared on the market as an electronic appliance capable of receiving information from a base station and displaying the received information.

15

If a parent makes his or her child carry a pager, he or she can easily send a message to the child with reliability at a low cost as occasion arises when the child is out. For this reason, pagers have come into widespread use.

20

Conventional pagers, however, are only capable of receiving information transmitted from a base station and displaying the received information, and have the problem in that children lose interest in them as they grow.

Also, there is a demand for a more interesting electronic appliance for children in early childhood.

The present invention has been achieved in view of the above-described circumstances and an object of the present invention is to provide an electronic appliance more interesting to children in early childhood by adding functions other than that of only receiving information from a base station and displaying the received information, and to realize an electronic appliance to which an improved function can be added according to the growth of a child.

10

#### Disclosure of Invention

An electronic appliance according to claim 1 provided by the present invention is characterized by comprising:

15

a) a first electronic appliance main unit which receives a message from a base station;

b) a second electronic appliance main unit to which the first electronic appliance main unit is detachably attached;

20

c) the first electronic appliance main unit having first notification means capable of notifying in a first mode when the message is received;

d) the first notification means having at least first display means for displaying characters for the

received message;

e) the first electronic appliance main unit having transfer means for transferring the received message to the second electronic appliance main unit;

5 f) the second electronic appliance main unit having receiving means for receiving the transferred message;

g) the second electronic appliance main unit having second notification means capable of notifying in  
10 a second mode when the message is received;

h) the second notification means having action notification means capable of notifying the reception of the message through an action;

i) the second notification means having speech  
15 notification means capable of notifying the reception of the message through a speech;

j) the second electronic appliance main unit having storage means in which a program relating to a game is stored;

20 k) the second electronic appliance main unit having input means for inputting an instruction relating to a game;

l) the second electronic appliance main unit having reading means for reading from the storage means a

program corresponding to an instruction inputted from the input means; and

m) the second electronic appliance main unit having execution means for executing a game according to the read program.

An electronic appliance according to claim 2 provided by the present invention is characterized by comprising:

a) a first electronic appliance main unit which receives a message from a base station;

b) a second electronic appliance main unit to which the first electronic appliance main unit is detachably attached;

c) the first electronic appliance main unit having first notification means capable of notifying in a first mode when the message is received;

d) the first notification means having at least first display means for displaying characters for the received message;

e) the first electronic appliance main unit having transfer means for transferring the received message to the second electronic appliance main unit;

f) the second electronic appliance main unit having receiving means for receiving the transferred

message;

g) the second electronic appliance main unit having second notification means capable of notifying in a second mode when the message is received;

5 h) the second notification means having action notification means capable of notifying the reception of the message through an action;

i) the second notification means having speech notification means capable of notifying the reception of the message through a speech;

j) the second electronic appliance main unit being provided with respect to a plurality of grades; and

k) the second electronic appliance main units, provided with respect to the plurality of grades, having different functions with respect to the grades.

15 An electronic appliance according to claim 3 provided by the present invention is based on the electronic appliance according to claim 2, and characterized by further comprising:

20 a) the transfer means for transferring a message using a standard sentence set in advance to the second electronic appliance main unit;

b) each of the second electronic appliance main units having additional message storage means for storing

an additional message with respect to the message using the standard sentence;

c) the additional message being set according to the grade of each second electronic appliance main unit;  
5 and

d) each of the second electronic appliance main units having means for adding the additional message to the message using the standard sentence set in advance when the message using the standard sentence is received  
10 from the first electronic appliance main unit, and for displaying the standard-sentence message with the additional message, or for outputting a speech.

An electronic appliance according to claim 4 provided by the present invention is based on the  
15 electronic appliance according to claim 2 or 3, and characterized by further comprising:

a) the action notification means being provided in correspondence with a plurality of grades; and

b) the action notification means, provided in  
20 correspondence with the plurality of grades, operating in different ways with respect to the grades.

Hereinafter, embodiment modes of the electronic appliance according to the present invention are described referring to the accompanying drawings.





# Best Mode for carrying out the Invention

An electronic appliance according to claim 1 has a pager unit 1 or 51, which is a first electronic appliance main unit which receives a message from a base station.

5 The electronic appliance also has an adapter unit 21 or 71 to which the pager unit 1 or 51 is detachably attached. The adapter units 21 and 71 are each a second electronic appliance main unit to which the first electronic appliance main unit is detachably attached.

10 The adapter unit 21 or 71 is formed into a suitable shape, such as a shape that imitates a mascot or a character, a shape of a pouch, or a shape of a fancy box. Each of the pager units 1 and 51 can be attached to either of the adapter units 21 and 71. When attached to

15 the adapter unit 21 or 71, the pager unit 1 or 51 is accommodated in the adapter unit 21 or 71. Needless to say, the arrangement may be such that, when the pager unit 1 or 51 is attached, only a portion of the pager unit 1 or 51 is accommodated in the adapter unit 21 or

20 71.

As shown in Figs. 1 and 2, the pager unit 1 has an antenna 3 and a receiving circuit 5, and receives message information formed of "#001", "#002", "#003", and so on from a base station. The receiving circuit 5 is

connected to a microcomputer 7. The microcomputer 7 has a memory 7a, which is constituted of a suitable storage means such as an EEPROM or an S-RAM, and in which self ID information, adapter unit 21 or 71 ID information, and  
 5 the like, are recorded. Also, in the memory 7a, various kinds of code information and messages corresponding respectively to the kinds of code information are recorded.

The microcomputer 7 is connected to an interface  
 10 circuit 9 and is electrically connected to the adapter unit 21 through the interface circuit 9. Also, the microcomputer 7 is connected to a speaker 13 through an incoming call sound generation circuit 11 and is connected to a liquid crystal display device 17 through a  
 15 liquid crystal display pattern memory 15.

The pager unit 1 has a first notification means for notifying in a first mode when a message is received from the base station. The liquid crystal display device 17 is provided as this first notification means to notify a  
 20 reception of a message by displaying characters. The microcomputer 7 and the interface circuit 9 constitute a transfer means for transferring the received message to the adapter unit 21.

As shown in Figs. 1 and 3, the adapter unit 21 has

a microcomputer 27. The microcomputer 27 has a ROM 27a and a RAM 27b. In the ROM 27a, self ID information, pager unit 1 or 51 ID information, and the like, are recorded. Also, in the ROM 27a, various kinds of code information and messages corresponding respectively to the kinds of code information are recorded. The RAM 27b is a work memory in which various kinds of data are temporarily stored.

The microcomputer 27 is connected to an interface circuit 23 and is electrically connected to the pager unit 1 through the interface circuit 23. The microcomputer 27 is also connected to an input circuit 25. The input circuit 25 has a plurality of push button switches, optical sensors, magnetic sensors or the like and is capable of taking in input signals from the outside.

Also, the microcomputer 27 is connected to a display data ROM 29 and to a received data storage memory 31. The microcomputer 27 is also connected to a speaker 35 through a speech generation circuit 33 and to an optical indication unit 39 constituted of LEDs, lamps or the like through a light emitting driver circuit 37.

Also, the microcomputer 27 is connected to a liquid crystal display device 43 through a liquid crystal driver

circuit 41 and is connected to a motor 47 through a motor driver circuit 45. By driving the motor 47, a movable portion (not shown) provided in the adapter unit 21 is operated or the shape of a portion or the entire body of the adapter unit 21 is changed. Needless to say, a solenoid driver circuit and a solenoid driven by the solenoid driver circuit may be provided in place of the motor driver circuit 45 and the motor 47 and connected to the microcomputer 27 to operate the movable portion provided in the adapter unit 21 or to change the shape of a portion or the entire body of the adapter unit 21 by magnetic action.

Further, the microcomputer 27 is connected to an antenna 49 through an electric wave transmitting circuit 48.

The adapter unit 21, which is the second electronic appliance main unit, has a receiving means for receiving a message transferred from the pager unit 1. That is, the interface circuit 23 and the microcomputer 27 constitute the receiving means for receiving the message.

The adapter unit 21 has a second notification means for notifying in a second mode different from the first mode when the above-mentioned message is received. That is, the speech generation circuit 33 and the speaker 35

notify the reception of the message through a speech, the  
light emitting driver circuit 37 and the optical  
indication unit 39 notify the reception of the message  
through light, the liquid crystal driver circuit 41 and  
5 the liquid crystal display device 43 notify the reception  
of the message through display of characters, the motor  
driver circuit 45 and the motor 47 dynamically notify the  
reception of the message, and the electric wave  
transmitting circuit 48 and the antenna 49 notify the  
10 reception of the message through electromagnetic waves.

As shown in Figs. 4 and 5, the pager unit 51 has an  
antenna 53 and a receiving circuit 55 and receives a  
message from the base station. The receiving circuit 55  
is connected to a microcomputer 57, and a received  
15 message is taken into the microcomputer 57. The  
microcomputer 57 has a memory 57a, which is constituted  
of a suitable storage means such as an EEPROM or S-RAM,  
and in which self ID information, adapter unit 21 or 71  
ID information, and the like, are recorded.

20 The microcomputer 57 is connected to an external  
input circuit 56 and to an interface circuit 59. The  
external input circuit 56 has a plurality of push button  
switches, and the like. An input signal relating to a  
switch operation can be taken into the microcomputer 57

through the external input circuit 56. The microcomputer 57 is also connected electrically to the adapter unit 71 through the interface circuit 59.

5 The microcomputer 57 is connected to a speaker 63 and to a vibrator 64 through an incoming call sound generation circuit 61. The microcomputer 57 is connected to a liquid crystal display device 67 through a liquid crystal display pattern memory 65. Further, the microcomputer 57 is connected to a data storage memory 10 69.

The pager unit 51 has a first notification means for notifying in a first mode when a message is received from the base station. The liquid crystal display device 67 is provided as this first notification means to notify 15 a reception of a message by displaying characters. The microcomputer 57 and the interface circuit 59 constitute a transfer means for transferring the received message to the adapter unit 71.

20 The adapter unit 71 will next be described with reference to Figs. 4 and 5. The adapter unit 71 has a microcomputer 77. The microcomputer 77 has a ROM 77a and a RAM 77b. In the ROM 77a, self ID information, pager unit 1 or 51 ID information, and the like, are recorded. The RAM 77b is a work memory in which various kinds of

data are temporarily stored. The microcomputer 77 has a selector 77c which selectively supplies groups of message information "#001", "#002", "#003".

5 The microcomputer 77 is connected to an interface circuit 73 and is electrically connected to the pager unit 51 through the interface circuit 73. The microcomputer 77 is also connected to an external input circuit 75. The external input circuit 75 has a plurality of push button switches, optical sensors,  
10 magnetic sensors or the like and is capable of taking in input signals from the outside.

Also, the microcomputer 77 is connected to a display data ROM 79 and to a received data storage memory 81. In the display data ROM 79, various kinds of code  
15 information and messages corresponding respectively to the kinds of code information are recorded.

Further, the microcomputer 77 is connected to a speaker 85 through a speech generation circuit 83 and to an optical indication unit 89 constituted of LEDs, lamps  
20 or the like through a light emitting driver circuit 87.

Also, the microcomputer 77 is connected to a liquid crystal display device 93 through a liquid crystal driver circuit 91 and is connected to a motor 97 through a motor driver circuit 95. By driving the motor 97, a movable



portion (not shown) provided in the adapter unit 71 is operated, or the shape of a portion or the entire body of the adapter unit 71 is changed. Needless to say, a solenoid driver circuit and a solenoid driven by the solenoid driver circuit may be provided in place of the motor driver circuit 95 and the motor 97 and connected to the microcomputer 77 to operate the movable portion provided in the adapter unit 71 or to change the shape of a portion or the entire body of the adapter unit 71 by magnetic action.

Further, the microcomputer 77 is connected to an antenna 99 through an electric wave transmitting circuit 98. The microcomputer 77 is connected to an external memory 94 through an external memory interface 92. The external memory 94 is constituted of a suitable memory unit such as an EEPROM or an S-RAM and is detachably attached to the adapter unit 71. In the external memory 94, speech data, image bit-map data, a program relating to notifying of an incoming call and a game program are recorded. The microcomputer 77 executes control processing relating to notifying of an incoming call on the basis of program data recorded in the external memory 94. This external memory may be interchanged for functional upgrading of the adapter unit 71.

The adapter unit 71, which is the second electronic appliance main unit, has a receiving means for receiving a message transferred from the pager unit 51. That is, the interface circuit 73 and the microcomputer 77  
5 constitute a receiving means for receiving this message.

The adapter unit 71 has a second notification means for notifying in a second mode different from the first mode when the above-mentioned message is received. That is, the speech generation circuit 83 and the speaker 85  
10 notify the reception of the message through a speech, the light emitting driver circuit 87 and the optical indication unit 89 notify the reception of the message through light, the liquid crystal driver circuit 91 and the liquid crystal display device 93 notify the reception  
15 of the message through display of characters, the motor driver circuit 95 and the motor 97 dynamically notify the reception of the message, and the electric wave transmitting circuit 98 and the antenna 99 notify the reception of the message through electromagnetic waves.

20 The adapter units 21 and 71 have a storage means in which a program relating to a game is stored. That is, the microcomputers 27 and 77 respectively have the ROMs 27a and 77a, in which programs for fortune-telling games, competitive games, and the like, are recorded. For

example, game programs for children in early childhood are stored in the ROM 27a, and game programs for pupils and students are stored in the ROM 77a. Each of these game programs may be formed such that the development of the game or the result of fortune-telling is influenced by a received message or messages previously accumulated.

The input circuits 25 and 75 are input means for inputting instructions relating to a game.

Each of the microcomputers 27 and 77 has a reading means for reading from the storage means a program according to an instruction inputted from the input means, and an execution means for executing a game in accordance with the read program.

As described above, the adapter units 21 and 71 are arranged such that a program corresponding to an instruction inputted from the input means is read from the storage means to execute a game. Therefore, each of the adapter units 21 and 71 can perform a game by itself even when the pager unit is not connected.

The pager units 1 and 51 have the liquid crystal display devices 17 and 67 as first display means for displaying characters for a received message.

Therefore, even when only the pager unit 1 or 51 is carried alone, the pager unit 1 or 51 can receive a

message from the base station by itself to display characters for the message.

The second notification means has an action notification means for notifying a reception of a message through an action. That is, the microcomputer 27 is connected to the motor 47 through the motor driver circuit 45. By driving the motor 47, a movable portion (not shown) provided in the adapter unit 21 is operated, or the shape of a portion or the entire body of the adapter unit 21 is changed. Needless to say, a solenoid driver circuit and a solenoid driven by the solenoid driver circuit may be provided in place of the motor driver circuit 45 and the motor 47 and connected to the microcomputer 27 to operate the movable portion provided in the adapter unit 21 or to change the shape of a portion or the entire body of the adapter unit 21 by magnetic action.

Similarly, the microcomputer 77 is connected to the motor 97 through the motor driver circuit 95. By driving the motor 97, a movable portion (not shown) provided in the adapter unit 71 is operated or the shape of a portion or the entire body of the adapter unit 71 is changed. Needless to say, a solenoid driver circuit and a solenoid driven by the solenoid driver circuit may be provided in

place of the motor driver circuit 95 and the motor 97 and  
connected to the microcomputer 77 to operate the movable  
portion provided in the adapter unit 71 or to change the  
shape of a portion or the entire body of the adapter unit  
5 71 by magnetic action.

Needless to say, the adapter units 21 and 71  
respectively have the speech generation circuits 33 and  
83 and the speakers 35 and 85 as speech notification  
means for notifying a reception of a message through a  
10 speech or sound. Also, the adapter units 21 and 71  
respectively have the light emitting driver circuits 37  
and 87 and the optical indication units 39 and 89 as  
optical notification means for notifying a reception of a  
message through a light. Also, the adapter units 21 and  
15 71 respectively have the motor driver circuits 45 and 95  
and the motors 47 and 97 as action notification means for  
notifying a reception of a message through an action.

The operation will next be described.

The operation of the pager unit 1 in a single state  
20 will first be described with reference to Fig. 2. The  
pager unit 1 can be carried alone. The receiving circuit  
5 receives through the antenna 3 a message transmitted  
from the base station. The microcomputer 7 deciphers the  
contents of the received message, which are formed of

code data, for example. The microcomputer 7 confirms the state of not being connected to the adapter unit 21, records the deciphered contents of the message in the liquid crystal display pattern memory 15, and makes the  
5 liquid crystal display device 17 display the contents of the message.

The microcomputer 7 sounds the speaker 13 by means of the incoming call sound generation circuit 11 to notify the reception of the message.

10 A person carrying the pager unit 1 can be informed of the incoming of the message through sounding of the speaker 13 and can read the message displayed on the liquid crystal display device 17.

The operation of the pager unit 51 shown in Figs. 4  
15 and 5 is the same as described above and the detailed description for it will be omitted.

The operation of the adapter unit 21 in a single state will next be described with reference to Fig. 3. A person having the adapter unit 21 in his or her  
20 possession can carry only the adapter unit 21 to enjoy various games, such as fortune-telling games and competitive games, in a suburb. That is, the microcomputer 27 has the ROM 27a, in which programs for fortune-telling games, competitive games, and the like,

are recorded.

When the person having the adapter unit 21 inputs an instruction relating to a game by operating an input circuit 25 operating portion, the microcomputer 27 reads  
5 the corresponding program from the ROM 27a in accordance with the inputted instruction from the input circuit 25 and develops the game in accordance with the read program.

The operation of the adapter unit 71 shown in Figs.  
10 4 and 5 is the same as described above and the detailed description for it will be omitted.

The operation will next be described with reference to Fig. 1 with respect to a case where the pager unit 1 is connected to the adapter unit 21 by a connection  
15 device 54.

When a message from the base station is received by the receiving circuit 5 through the antenna 3, the microcomputer 7 deciphers the contents of the received message, which are formed of code data, for example. The  
20 microcomputer 7 sends a confirmation signal such as ID information proper to the pager unit 1 to the adapter unit 21 through the interface circuit 9 and the connection device 54.

When the adapter unit 21 receives the confirmation

signal through the interface circuit 23, the microcomputer 27 makes a determination as to whether the confirmation signal is correct. For example, the microcomputer 27 makes a determination as to whether the  
5 pager unit 1 ID information coincides with the ID information registered in advance, and determines that the pager unit 1 ID information is correct if it coincides with the registered ID information.

When the microcomputer 27 determines that the pager  
10 unit 1 ID information is correct, it sends a confirmation signal such as the ID information proper to the adapter unit 21 to the pager unit 1 through the interface circuit 23 and the connection device 54.

When the pager unit 1 receives the confirmation  
15 signal from the adapter unit 21 through the interface circuit 9, the microcomputer 7 makes a determination as to whether this confirmation signal is correct. For example, the pager unit 1 performs the same determination operation as described above. That is, it makes a  
20 determination as to whether the adapter unit 21 ID information coincides with the ID information registered in advance, and determines that the adapter unit 21 ID information is correct if it coincides with the registered ID information.



When the pager unit 1 determines that the adapter unit 21 ID information is correct, it sends the message information received from the base station to the adapter unit 21 through the interface circuit 9 and the connection device 54.

In the adapter unit 21, the microcomputer 27 receives the message information, then reads, from the display data ROM 29, character data corresponding to code information contained in the message information, and makes the liquid crystal display device 43 display the character data together with a background image such as a character image or a picture. The microcomputer 27 records the message data and the receiving date in the received data storage memory 31. Simultaneously, the microcomputer 27 sounds the speaker 35 by means of the speech generation circuit 33 and turns on the optical indication unit 39 through the light emitting driver circuit 37, thereby notifying the reception of the message information. Also, the microcomputer 27 rotates the motor 47 by means of the motor driver circuit 45 to operate the movable portion provided in the adapter unit 21 or to change the shape of a portion or the entire body of the adapter unit 21. Further, the microcomputer 27 drives the electric wave transmitting circuit 48 to

transmit the message information in the form of electromagnetic waves from the antenna 49 to an unillustrated receiving device.

5 The operation will next be described with reference to Fig. 4 with respect to a case where the pager unit 51 receives message information from the base station by itself and the pager unit 51 is thereafter connected to the adapter unit 71.

10 First, the pager unit 51 receives message information formed of "#001", "#002", and "#003" from the base station. Message information "#001" is, for example, the number of the pager unit 51; message information "#002" is, for example, information about a message; and message information "#003" is, for example,  
15 information about a sender.

In the pager unit 51, the microcomputer 57 drives the speaker 63 and the vibrator 64 by means of the incoming call sound generation circuit 61 and records the received message information in the data storage memory  
20 69.

Thereafter, when the pager unit 51 is connected to the adapter unit 71, the pager unit 51 and the adapter unit 71 perform mutual confirmation operations and the pager unit 51 thereafter transfers the message

information to the adapter unit 71 as described above.

5       The microcomputer 77 receives the message  
information from the pager unit 51 and drives the speaker  
85 by means of the speech generation circuit 83 to  
10   output, for example, a speech "a message came a little  
while ago" in a voice of a suitable character, and  
simultaneously drives the optical indication unit 89 by  
means of the light emitting driver circuit 87. Also, the  
microcomputer 77 displays an animation image on the  
10   liquid crystal display device 93 by means of the liquid  
crystal driver circuit 91 to notify that the message  
arrived. Also, the microcomputer 77 drives the motor 97  
by means of the motor driver circuit 95 to operate the  
movable portion provided in the adapter unit 71 or to  
15   change the shape of a portion or the entire body of the  
adapter unit 71.

Further, the microcomputer 77 transmits information  
that the message arrived from the antenna 99 by means of  
the electric wave transmitting circuit 98.

20       Next, when the person having the adapter unit 71 in  
his or her possession instructs display of the message by  
operating the external input circuit 75, the  
microcomputer 77 deciphers the message information from  
the pager unit 51, drives the speaker 85 by means of the

speech generation circuit 83 to output, for example, a speech "morning" in a voice of a suitable character, and simultaneously turns on and off the optical indication unit 89 by means of the light emitting driver circuit 87.

5 Also, the microcomputer 77 displays characters for the message on the liquid crystal display device 93 by means of the liquid crystal driver circuit 91. Also, the microcomputer 77 drives the motor 97 by means of the motor driver circuit 95 to operate the movable portion  
10 provided in the adapter unit 71 or to change the shape of a portion or the entire body of the adapter unit 71.

Further, the microcomputer 77 transmits the message information from the antenna 99 by means of the electric wave transmitting circuit 98.

15 The operation will next be described with reference to Fig. 5 with respect to a case where the pager unit 51 receives message information from the base station while being connected to the adapter unit 71.

First, the pager unit 51 receives message  
20 information formed of "#001", "#002", and "#003" from the base station. Message information "#001" is, for example, the number of the pager unit 51; message information "#002" is, for example, information about a message; and message information "#003" is, for example,

information about a sender.

5 In the pager unit 51, the microcomputer 57 drives the speaker 63 and the vibrator 64 by means of the incoming call sound generation circuit 61 and records the received message information in the data storage memory 69. Also, the pager unit 51 transfers the received message information to the adapter unit 71 after performing the above-described ID information confirmation processing.

10 In the adapter unit 71, the microcomputer 77 receives the message information from the pager unit 51 and then executes control processing in accordance with a program read from the external memory 94. That is, the microcomputer 77 drives the speaker 85 by means of the  
15 speech generation circuit 83 to output, for example, a speech "a message was received", and simultaneously drives the optical indication unit 89 by means of the light emitting driver circuit 87. Also, the microcomputer 77 displays an animation image on the  
20 liquid crystal display device 93 by means of the liquid crystal driver circuit 91 to notify that the message arrived. Also, the microcomputer 77 drives the motor 97 by means of the motor driver circuit 95 to operate the movable portion provided in the adapter unit 71 or to



memory 65 and records the message "#001", "#002", "#003"  
in the data storage memory 69.

5 An embodiment mode of an electronic appliance  
according to claim 2 will next be described with  
reference to the drawings.

As shown in Fig. 6, a pager unit 108 and a  
plurality of kinds of adapter units 110, 112, 114, 116,  
and 118 are provided. The pager unit 108 receives a  
message transmitted from a portable telephone 104, or a  
10 home telephone or a public telephone 106 via a base  
station 102. The pager unit 108 can be detachably  
attached to any one of the adapter units 110, 112, 114,  
116, and 118. The plurality of kinds of adapter units  
110, 112, 114, 116, and 118 are provided in  
15 correspondence with the stages of growth of a child, and  
have different functions according to the stages of  
child's growth. The adapter units 110, 112, 114, 116,  
and 118 are graded in this order with respect to the  
stages of child's growth.

20 For example, the adapter unit 110 having a circuit  
section incorporated therein has a jacket portion made of  
a material agreeable to the touch, such as cloth and  
formed into the shape of a dog. A child can enjoy the  
thus-formed adapter unit 110 by always hugging it. The

adapter unit 110 can be used as a stuffed toy for infants. The adapter unit 110 having the pager unit 108 attached thereto has such functions that, when a message is received, an LED set in a collar portion is turned on and off, a speech representing the contents of the message is outputted, and a motor and a drive mechanism are operated for walking.

The adapter unit 112 is formed into the shape of a robot in its external appearance and can be used as a robot toy for children in early childhood. The adapter unit 112 having the pager unit 108 attached thereto has such functions that, when a message is received, LEDs set in eye portions are turned on and off, a speech representing the contents of the message is outputted, and a motor and a drive mechanism are operated to move a head portion, arm portions or leg portions.

The adapter unit 114 is formed into the shape of a motor vehicle in its external appearance and can be used as a car toy for children in middle childhood. The adapter unit 114 having the pager unit 108 attached thereto has such functions that, when a message is received, LEDs set in headlight portions are turned on and off, a speech representing the contents of the message is outputted, and a motor and a drive mechanism



are operated to rotate wheels for traveling.

The adapter unit 116 is formed into the shape of a portable game machine in its external appearance and can be used as a portable game toy for children in late childhood. The adapter unit 116 having the pager unit 108 attached thereto has such functions that, when a message is received, an actuator is operated to automatically open a cover portion, a speech representing the contents of the message is outputted, and the contents of the message and information attached to the message are displayed by the liquid crystal display device. Also, a cassette 120 can be attached to the adapter unit 116. A memory unit such as a ROM in which game programs are stored is provided in the cassette 120. The adapter unit 116 in a single state enables enjoyment of various games. Further, the adapter unit 116 has an electronic notepad circuit section incorporated therein and can be used as an electronic notepad capable of storing data such as addresses and telephone numbers and reading out desired data when necessary.

The adapter unit 118 is formed into the shape of a music box in its external appearance and can be used as a music box toy for children in late childhood. The adapter unit 118 having the pager unit 108 attached

thereto has such functions that, when a message is received, a music box circuit and an actuator are operated to automatically play a suitable melody, a speech representing the contents of the message is  
5 outputted, and the contents of the message is displayed by the liquid crystal display device. Also, the cassette 120 can be attached to the adapter unit 118. A memory unit such as a ROM in which game programs are stored is provided in the cassette 120. The adapter unit 118 in a  
10 single state enables enjoyment of various games. Further, the adapter unit 118 has an electronic notepad circuit section incorporated therein and can be used as an electronic notepad capable of storing data such as addresses and telephone numbers and reading out desired  
15 data when necessary.

The cassette 120 having an external memory such as a ROM is detachably attached to each of the adapter units 110, 112, 114, 116, and 118. It is possible to upgrade each of the adapter units 110, 112, 114, 116, and 118 in  
20 terms of function by interchanging the cassette 120.

As described above, the adapter units 110, 112, 114, 116, and 118 having different functions according to the stages of child's growth can be provided.

An electronic appliance according to claim 3 has a

pager unit 108 or 151, which is a first electronic appliance main unit which receives a message from a base station. The electronic appliance also has adapter units 110, 112, 114, 116, and 118 to which the pager unit 108 or 151 is detachably attached. Each of the adapter units 110, 112, 114, 116, and 118 is a second electronic appliance main unit to which the first electronic appliance main unit is detachably attached. Each of the adapter units 110, 112, 114, 116, and 118 is formed into a suitable shape, such as a shape that imitates a mascot or a character, or the shape of a robot, a motor vehicle, a music box, a pouch, a fancy box, a game machine or the like. Each of the pager units 108 and 151 can be attached to any of the adapter units 110, 112, 114, 116, and 118. The pager unit 108 or 151 is attached in a state of being accommodated in one of the adapter units 110, 112, 114, 116, and 118. Needless to say, the arrangement may be such that, when the pager unit 108 or 151 is attached, only a portion of the pager unit 108 or 151 is accommodated in one of the adapter units 110, 112, 114, 116, and 118.

Fig. 7 illustrates a case where the pager unit 108 is attached to the adapter unit 110. As shown in Fig. 7, the pager unit 108 has an antenna 103 and a receiving

circuit 105 and receives a message from the base station 102. The receiving circuit 105 is connected to a microcomputer 107. The microcomputer 107 has a memory 107a, which is constituted of a suitable storage means such as an EEPROM or an S-RAM, and in which self ID information, adapter unit 110 ID information, and the like, are recorded. Also, in the memory 107a, various kinds of code information and messages corresponding respectively to the kinds of code information are recorded.

The microcomputer 107 is connected to an interface circuit 109 and is electrically connected to the adapter unit 110 through the interface circuit 109. Also, the microcomputer 107 is connected to a speaker 113 through an incoming call sound generation circuit 111 and is connected to a liquid crystal display device 117 through a liquid crystal display pattern memory 115.

The pager unit 108 has a first notification means for notifying in a first mode when a message is received from the base station. The liquid crystal display device 117 is provided as this first notification means to notify a reception of a message by displaying characters. The microcomputer 107 and the interface circuit 109 constitute a transfer means for transferring a received

message to the adapter unit 110. If the message from the base station is a message using a standard sentence set in advance, the transfer means transfers the standard sentence message to the adapter unit 110.

5           The adapter unit 110 has a microcomputer 127. The microcomputer 127 has a ROM 127a and a RAM 127b. In the ROM 127a, self ID information, pager unit 108 or 151 ID information, and the like, are recorded. Also, in the ROM 127a, various kinds of code information and messages  
10           corresponding respectively to the kinds of code information are recorded. Further, in the ROM 127a, additional messages to be added to messages using various standard sentences are stored by being related to the messages using the standard sentences. For example, an  
15           additional message "bowwow" is stored by being related to a message using a standard sentence "let's play". The RAM 127b is a work memory in which various kinds of data are temporarily stored.

20           The microcomputer 127 is connected to an interface circuit 123 and is electrically connected to the pager unit 108 through the interface circuit 123. The microcomputer 127 is also connected to an input circuit 125. The input circuit 125 has a plurality of push button switches, optical sensors, magnetic sensors or the

like and is capable of taking in input signals from the outside.

Also, the microcomputer 127 is connected to a display data ROM 129 and to a received data storage memory 131. The microcomputer 127 is also connected to a speaker 135 through a speech generation circuit 133 and to an optical indication unit 139 constituted of LEDs, lamps or the like through a light emitting driver circuit 137.

Also, the microcomputer 127 is connected to a liquid crystal display device 143 through a liquid crystal driver circuit 141 and is connected to a motor 147 through a motor driver circuit 145. The motor 147 is connected to an actuator 148. The actuator 148 moves leg portions which are provided to enable walking. By driving the motor 147, the actuator 148 is operated to move movable portions (not shown) such as leg portions provided in the adapter unit 110, thereby enabling walking of the adapter unit 110. Needless to say, a solenoid driver circuit and a solenoid driven by the solenoid driver circuit may be provided in place of the motor driver circuit 145 and the motor 147 and connected to the microcomputer 127 to operate the movable portion provided in the adapter unit 110 or to change the shape

of a portion or the entire body of the adapter unit 110 by magnetic action.

5 An external memory 120 is detachably attached to the adapter unit 110, and the attached external memory 120 is connected to the microcomputer 127 through an external memory interface circuit 149. It is possible to upgrade the adapter unit 110 in terms of function by interchanging the external memory 120.

10 For example, the external memory 120 may be interchanged to enable the adapter unit 110 to perform more complicated operations, including making a backward movement and alternately making forward and backward movements, as well as walking. Also, the external memory 120 may be interchanged to increase the number of kinds  
15 of additional messages related to messages using standard sentences.

The adapter unit 110, which is the second electronic appliance main unit, has a receiving means for receiving a message transferred from the pager unit 108.  
20 That is, the interface circuit 123 and the microcomputer 127 constitute a receiving means for receiving this message.

The adapter unit 110 has a second notification means for notifying in a second mode when the above-

mentioned message is received. That is, the speech generation circuit 133 and the speaker 135 notify the reception of the message through a speech, the light emitting driver circuit 137 and the optical indication unit 139 notify the reception of the message through light, the liquid crystal driver circuit 141 and the liquid crystal display device 143 notify the reception of the message through display of characters, and the motor driver circuit 145, the motor 147 and the actuator 148 dynamically notify the reception of the message.

When the microcomputer 127 determines that a message received from the pager unit 108 is a standard sentence, it reads out an additional message corresponding to this standard sentence from the ROM 127a, adds the additional message to the standard sentence, and outputs the standard sentence with the additional message to the speech generation circuit 133 and to the liquid crystal driver circuit 141. For example, an additional message "bowwow" related to the message using a standard sentence "let's play" is added to this message, and a message "let's play ! bowwow !" is outputted from the speaker 135 and is displayed by the liquid crystal display device 141.

Fig. 8 illustrates a case where the pager unit 151



is attached to the adapter unit 118. As shown in Fig. 8, the pager unit 151 has an antenna 153 and a receiving circuit 155 and receives a message from the base station. The receiving circuit 155 is connected to a microcomputer 157, and a received message is taken into the microcomputer 157. The microcomputer 157 has a memory 157a, which is constituted by a suitable storage means such as an EEPROM or an S-RAM, and in which self ID information, adapter unit 118 ID information, etc., are recorded.

The microcomputer 157 is connected to an external input circuit 156 and to an interface circuit 159. The external input circuit 156 has a plurality of push button switches or the like. An input signal relating to a switch operation can be taken into the microcomputer 157 through the external input circuit 156. Also, the microcomputer 157 is electrically connected to the adapter unit 118 through the interface circuit 159.

The microcomputer 157 is connected to a speaker 163 and to a vibrator 164 through an incoming call sound generation circuit 161. The microcomputer 157 is connected to a liquid crystal display device 167 through a liquid crystal display pattern memory 165. Further, the microcomputer 157 is connected to a data storage

memory 169.

The pager unit 151 has a first notification means for notifying in a first mode when a message is received from the base station. The liquid crystal display device  
5 167 is provided as this first notification means to notify a reception of a message by displaying characters. The microcomputer 157 and the interface circuit 159 constitute a transfer means for transferring a received message to the adapter unit 118. If a message from the  
10 base station is a message using a standard sentence set in advance, the transfer means transfers the standard sentence message to the adapter unit 118.

The adapter unit 118 will next be described. The adapter unit 118 has a microcomputer 177. The  
15 microcomputer 177 has a ROM 177a and a RAM 177b. In the ROM 177a, self ID information, pager unit 108 or 151 ID information, etc., are recorded. Also, in the ROM 177a, additional messages to be added to messages using various standard sentences are stored by being related to the  
20 messages using the standard sentences. For example, an additional message "when the homework is done" is stored by being related to a message using a standard sentence "let's play". The RAM 177b is a work memory in which various kinds of data are temporarily stored. Also, the

microcomputer 177 has a selector 177c which selectively supplies groups of message information "#001", "#002", "#003".

5 The microcomputer 177 is connected to an interface circuit 173 and is electrically connected to the pager unit 151 through the interface circuit 173. The microcomputer 177 is also connected to an external input circuit 175. The external input circuit 175 has a plurality of push button switches, optical sensors, 10 magnetic sensors or the like, and is capable of taking in input signals from the outside.

Also, the microcomputer 177 is connected to a display data ROM 179 and to a received data storage memory 181. In the display data ROM 179, various kinds 15 of code information and messages corresponding respectively to the kinds of code information are recorded. The microcomputer 177 is connected to an electronic notepad circuit section 182, which is connected to a ROM 184 and to a RAM 186.

20 In the ROM 184, various sorts of data and programs relating to functions of an electronic notepad are stored. In the RAM 186, various sorts of data, such as addresses and telephone numbers, input by a user through the external input circuit 175 are stored. The



Also, the microcomputer 177 is connected to an actuator 199 through a music box driver circuit 198. This actuator 199 operates a keyboard in synchronization with a melody set in advance. The music box driver circuit 198 is driven to play a suitable melody set in advance and to operate the keyboard through the operation of the actuator 199.

Further, the microcomputer 177 is connected to an external memory 194 through an external memory interface 192. This external memory 194 is constituted by a suitable storage means such as an EEPROM or an S-RAM and the like and is detachably attached to the adapter unit 118. In the external memory 194 are recorded music box tune data, speech data, image bit-map data, programs relating to incoming call notification, and various game programs. The microcomputer 177 executes control processing relating to incoming call notification on the basis of program data recorded in the external memory 194. It is possible to upgrade the adapter unit 118 in terms of function by interchanging this external memory.

For example, the external memory 194 may be interchanged to increase the number of types of music playable by the music box driver circuit 198 and to enable a more complicated piece of music to be played.

Also, the external memory 194 may be interchanged to increase the kinds of additional messages related to messages using standard sentences.

5       The adapter unit 118, which is the second electronic appliance main unit, has a receiving means for receiving a message transferred from the pager unit 151. That is, the interface circuit 173 and the microcomputer 177 constitute a receiving means for receiving this message.

10       Also, the adapter unit 118 has a second notification means for notifying in a second mode when the above-mentioned message is received. That is, the speech generation circuit 183 and the speaker 185 notify the reception of the message through a speech, the light  
15       emitting driver circuit 187 and the optical indication unit 189 notify the reception of the message through light, the liquid crystal driver circuit 191 and the liquid crystal display device 193 notify the reception of the message through display of characters, and the motor  
20       driver circuit 195, the motor 197 and the actuator 199 dynamically notify the reception of the message.

When the microcomputer 177 determines that a message received from the pager unit 151 is a standard sentence, it reads out an additional message

corresponding to this standard sentence from the ROM 177a, adds the additional message to the standard sentence, and outputs the standard sentence with the additional message to the speech generation circuit 183 and to the liquid crystal driver circuit 191. For example, an additional message "when the homework is done" related to the message using a standard sentence "let's play" is added to this message, and a message "let's play! when the homework is done!" is output from the speaker 185 and is displayed by the liquid crystal display device 193.

The invention according to claim 4 will next be described. As shown in Fig. 6, a pager unit 108 and a plurality of kinds of adapter units 110, 112, 114, 116, and 118 are provided. The pager unit 108 receives a message transmitted from a portable telephone 104, a home telephone or a public telephone 106 via a base station 102. The pager unit 108 can be detachably attached to any one of the adapter units 110, 112, 114, 116, and 118. These plurality of kinds of adapter units 110, 112, 114, 116, and 118 are provided in correspondence with the stages of growth of a child, and have different functions according to the stages of child's growth. The adapter units 110, 112, 114, 116, and 118 operate in different

ways according to the stages of child's growth.

For example, the adapter unit 110 formed into the shape of a stuffed toy dog operates in such a manner that, when it receives a message, it turns on and off an LED set in a collar of the stuffed toy, outputs a speech  
5 representing the contents of the message, and operates a motor and a drive mechanism to perform walking. Also, when a microcomputer 127 determines that a message received from the pager unit 108 is a standard sentence,  
10 it reads out an additional message corresponding to this standard sentence from the ROM 127a, adds the additional message to the standard sentence, and outputs the standard sentence with the additional message to the speech generation circuit 133 and to the liquid crystal  
15 driver circuit 141. For example, an additional message "bowwow" related to the message using a standard sentence "let's play" is added to this message, and a message "let's play! bowwow!" is output from the speaker 135 and is displayed by the liquid crystal display device 141.

20 The adapter unit 112 formed into the shape of a robot operates in such a manner that, when it receives a message, it turns on and off LEDs set in the eyes of the robot, outputs a speech representing the contents of the message, and operates a motor and a drive mechanism to



operate a head portion, arm portions and leg portions.

The adapter unit 114 formed into the shape with an external appearance of a car operates in such a manner that, when it receives a message, it turns on and off  
5 LEDs set in the head lights, outputs a speech representing the contents of the message, and operates a motor and a drive mechanism to rotate wheels, thereby traveling. The traveling time may be set as desired in advance.

10 The adapter unit 116 formed into the shape of a portable game machine operates in such a manner that, when it receives a message, it operates an actuator to automatically open a cover portion, outputs a speech representing the contents of the message, and displays  
15 the contents of the message and information attached to the message on the liquid crystal display device.

The adapter unit 118 formed into the shape of a music box operates in such a manner that, when it receives a message, it operates a music box circuit and  
20 an actuator to automatically play a suitable melody, outputs a speech representing the contents of the message, and displays the contents of the message on the liquid crystal display device.

The operation will next be described.

The pager unit 108 or 156 receives a message transmitted from the portable telephone 104, the home telephone or the public telephone 106 via the base station 102. The pager unit 108 or 156 can be detachably  
5 attached to any of the adapter units 110, 112, 114, 116, and 118. These plurality of kinds of adapter units 110, 112, 114, 116, and 118 are provided in correspondence with the stages of growth of a child, and have different functions according to the stages of child's growth.

10 For example, the adapter unit 110 having a circuit section incorporated therein has a jacket portion made of a material agreeable to the touch, such as cloth and formed into the shape of a dog. Therefore, a child can enjoy the thus-formed adapter unit 110 by always hugging  
15 it and the adapter unit 110 can be used as a stuffed toy for infants. The adapter unit 110 having the pager unit 108 attached thereto have such functions that, when a message is received, an LED set in a collar portion is turned on and off, a speech representing the contents of  
20 the message is output, and a motor and a drive mechanism are operated for walking.

Also, in the adapter unit 110, when the microcomputer 127 determines that a message received from the pager unit 108 is a standard sentence, it reads out

from the ROM 127a an additional message to be added to the standard sentence, adds the additional message to the standard sentence, and outputs the standard sentence with the additional message to the speech generation circuit 133 and to the liquid crystal driver circuit 141. For example, an additional message "bowwow" related to the message using a standard sentence "let's play" is added to this message, and a message "let's play! bowwow!" is output from the speaker 135 and is displayed by the liquid crystal display device 141.

The adapter unit 112 is formed into the shape of a robot in its external appearance and can be used as a robot toy for children in early childhood. The adapter unit 112 having the pager unit 108 attached thereto have such functions that, when a message is received, LEDs set in the eyes are turned on and off, a speech representing the contents of the message is output, and a motor and a drive mechanism are operated to move a head portion, arm portions or leg portions.

Also, in the adapter unit 112, when it is determined that a message received from the pager unit is a standard sentence, an additional message related to the standard sentence is read out from the memory unit and is added to the standard sentence to be displayed, and a

speech is also output. For example, an additional message "buck up" related to the message using a standard sentence "let's play" is added to this message, and a message "buck up! let's play!" is output from the speaker  
5 and is displayed by the liquid crystal display device.

The adapter unit 114 is formed into the shape of a motor vehicle in its external appearance and can be used as a car toy for children in middle childhood. The adapter unit 114 having the pager unit 108 attached  
10 thereto have such functions that, when a message is received, LEDs set in headlights are turned on and off, a speech representing the contents of the message is output, and a motor and a drive mechanism are operated to rotate wheels for traveling.

15 Also, in the adapter unit 114, when it is determined that a message received from the pager unit is a standard sentence, an additional message related to the standard sentence is read out from the memory unit and is added to the standard sentence to be displayed, and a  
20 speech is also output. For example, an additional message "watch out for cars" related to the message using a standard sentence "let's play" is added to this message, and a message "let's play! watch out for cars!" is output from the speaker and is displayed by the liquid

crystal display device.

The adapter unit 116 is formed into the shape of a portable game machine in its external appearance and can be used as a portable game toy for children in late childhood. The adapter unit 116 having the pager unit 108 attached thereto have such functions that, when a message is received, an actuator is operated to automatically open a cover portion, a speech representing the contents of the message is output, and the contents of the message and information attached to the message are displayed by the liquid crystal display device. Also, a cassette 120 is detachably attached to the adapter unit 116. A memory unit such as a ROM in which game programs are stored is provided in the cassette 120. The adapter unit 116 in a single state enables enjoyment of various games. Further, the adapter unit 116 has an electronic notepad circuit section incorporated therein and can be used as an electronic notepad capable of storing data such as addresses and telephone numbers and reading out desired data when necessary.

Also, in the adapter unit 116, when it is determined that a message received from the pager unit is a standard sentence, an additional message related to the standard sentence is read out from the memory unit and is

added to the standard sentence to be displayed, and a speech is also output. For example, an additional message "but we'll be home at the appointed time, won't we?" related to the message using a standard sentence

5 "let's play" is added to this message, and a message "let's play! but we'll be home at the appointed time, won't we ?" is output from the speaker and is displayed by the liquid crystal display device.

The adapter unit 118 is formed into the shape of a

10 music box in its external appearance and can be used as a music box toy for children in late childhood. The adapter unit 118 having the pager unit 108 attached thereto have such functions that, when a message is received, a music box circuit and an actuator are

15 operated to automatically play a suitable melody, a speech representing the contents of the message is output, and the contents of the message are displayed by the liquid crystal display device. Also, a cassette 120 is detachably attached to the adapter unit 118. An

20 external memory unit such as a ROM in which game programs are stored is provided in the cassette 120. The adapter unit 118 in a single state enables enjoyment of various games. Further, the adapter unit 118 has an electronic notepad circuit section 182 incorporated therein and can

be used as an electronic notepad capable of storing data such as addresses and telephone numbers and reading out desired data when necessary.

Also, in the adapter unit 118, when the  
5 microcomputer 177 determines that a message received from the pager unit 156 is a standard sentence, it reads out from the ROM 177a an additional message related to the standard sentence, adds the additional message to the standard sentence, and outputs the standard sentence with  
10 the additional message to the speech generation circuit 183 and to the liquid crystal driver circuit 191. For example, an additional message "when the homework is done" related to the message using a standard sentence "let's play" is added to this message, and a message  
15 "let's play! when the homework is done!" is output from the speaker 185 and is displayed by the liquid crystal display device 193.

The plurality of kinds of adapter units 110, 112, 114, 116, and 118, provided in correspondence with the  
20 stages of growth of a child, have different functions according to the stages of child's growth. However, the functions of these adapter units are not limited to the above-described examples, and other suitable functions may be added. For example, a mail transmitting function

for transmitting a mail consisting of text data only may be added to the medium-grade adapter unit 114. Also, a function capable of transmitting bit-map data may be added to the higher-grade adapter unit 116. Further, a function capable of transmitting text data and bit-map data may be added to the highest-grade adapter unit 118. Thus, electronic appliance having improved functions added thereto according to the growth of a child can be provided.

10           As described above, the invention according to claim 1 has a first electronic appliance main unit which receives a message from a base station, and a second electronic appliance main unit to which the first electronic appliance main unit is detachably attached.

15   The first electronic appliance main unit has a first notification means for notifying in a first mode when a message is received, and a transfer means for transferring the received message to the second electronic appliance main unit. The second electronic

20   appliance main unit has a receiving means for receiving the transferred message, and a second notification means for notifying in a second mode when the message is received. Therefore, functions other than the function of only receiving and displaying information transmitted



from the base station can also be added, so that a more interesting electronic appliance can be provided for children in early childhood, and an electronic appliance to which improved functions can be added according to the growth of a child can also be realized.

Also, the second electronic appliance main unit is arranged to have a storage means in which programs relating to games are stored, an input means for inputting instructions relating to the games, a reading means for reading from the storage means a program according to an instruction input from the input means, and execution means for executing a game in accordance with the read program. Therefore, it is possible to enjoy various games by operating only the second electronic appliance main unit.

Also, the first notification means is arranged to have at least a first display means for displaying characters for a received message. It is, therefore, possible to receive and display a message from the base station by carrying only the first electronic appliance main unit, and to change the combination according to use or to use only the first electronic appliance main unit. Thus, an electronic appliance having improved general versatility can be realized.

Also, the invention according to claim 2 has a plurality of second electronic appliance main units provided in correspondence with a plurality of grades, and the second electronic appliance main units provided  
5 in correspondence with a plurality of grades have different functions with respect to the grades. It is, therefore, possible to provide an interesting electronic appliance for children in early childhood, and to realize an electronic appliance to which improved functions can  
10 be added according to the growth of a child.

Also, the invention according to claim 3 has a transfer means for transferring a message using a standard sentence set in advance to one of second electronic appliance main units. Each second electronic  
15 appliance main unit has an additional message storage means for storing additional messages by relating the additional messages to messages using standard sentences, the additional messages being set according to the grade of the second electronic appliance main unit. The second  
20 electronic appliance main unit has a means for adding an additional message to a message using a standard sentence set in advance when this message is received from the first electronic appliance main unit, and for displaying the standard-sentence message with the additional

message, or for outputting a speech. It is, therefore, possible to realize an interesting electronic appliance capable of adding suitable additional messages according to the growth of a child.

5           The invention according to claim 4 is provided with action notification means in correspondence with a plurality of grades, and the action notification means provided in correspondence with a plurality of grades are arranged to operate in different ways with respect to the  
10       grades. It is, therefore, possible to provide an interesting electronic appliance according to preferences of children in early childhood.

## CLAIMS

1. An electronic appliance characterized by comprising:

5 a) a first electronic appliance main unit which receives a message from a base station;

b) a second electronic appliance main unit to which said first electronic appliance main unit is detachably attached;

10 c) said first electronic appliance main unit having first notification means capable of notifying in a first mode when said message is received;

d) said first notification means having at least first display means for displaying characters for the  
15 received message;

e) said first electronic appliance main unit having transfer means for transferring the received message to said second electronic appliance main unit;

f) said second electronic appliance main unit  
20 having receiving means for receiving said transferred message;

g) said second electronic appliance main unit having second notification means capable of notifying in a second mode when said message is received;

h) said second notification means having action notification means capable of notifying the reception of the message through an action;

5 i) said second notification means having speech notification means capable of notifying the reception of the message through a speech;

j) said second electronic appliance main unit having storage means in which a program relating to a game is stored;

10 k) said second electronic appliance main unit having input means for inputting an instruction relating to a game;

15 l) said second electronic appliance main unit having reading means for reading from the storage means a program corresponding to an instruction inputted from the input means; and

m) said second electronic appliance main unit having execution means for executing a game according to said read program.

20

2. An electronic appliance characterized by comprising:

a) a first electronic appliance main unit which receives a message from a base station;

b) a second electronic appliance main unit to which said first electronic appliance main unit is detachably attached;

5 c) said first electronic appliance main unit having first notification means capable of notifying in a first mode when said message is received;

d) said first notification means having at least first display means for displaying characters for the received message;

10 e) said first electronic appliance main unit having transfer means for transferring said received message to said second electronic appliance main unit;

f) said second electronic appliance main unit having receiving means for receiving said transferred  
15 message;

g) said second electronic appliance main unit having second notification means capable of notifying in a second mode when said message is received;

h) said second notification means having action  
20 notification means capable of notifying the reception of the message through an action;

i) said second notification means having speech notification means capable of notifying the reception of the message through a speech;

j) said second electronic appliance main unit being provided with respect to a plurality of grades; and

k) said second electronic appliance main units, provided with respect to said plurality of grades, having  
5 different functions with respect to the grades.

3. An electronic appliance according to claim 2, characterized by further comprising:

a) said transfer means for transferring a message  
10 using a standard sentence set in advance to the second electronic appliance main unit;

b) each of said second electronic appliance main units having additional message storage means for storing an additional message with respect to said message using  
15 the standard sentence;

c) said additional message being set according to the grade of each second electronic appliance main unit; and

d) each of said second electronic appliance main  
20 units having means for adding the additional message to the message using the standard sentence set in advance when the message using the standard sentence is received from the first electronic appliance main unit, and for displaying the standard-sentence message with said





**ABSTRACT**

To provide an electronic appliance not only capable of displaying a message but also interesting to children in early childhood and to realize an electronic appliance to which an improved function can be added according to the growth of a child.

A pager unit 1 and an adapter unit 21 to which the pager unit 1 can be detachably attached are provided. The pager unit 1 has a liquid crystal display device 17 for notifying when a message is received, and a microcomputer 7 which transfers the received message to the adapter unit 21. The adapter unit 21 has a microcomputer 27 which receives the transferred message, and a speaker 35, a liquid crystal display device 43 and a motor driver circuit 45 each of which notifies the reception of the message.

FIG. 1

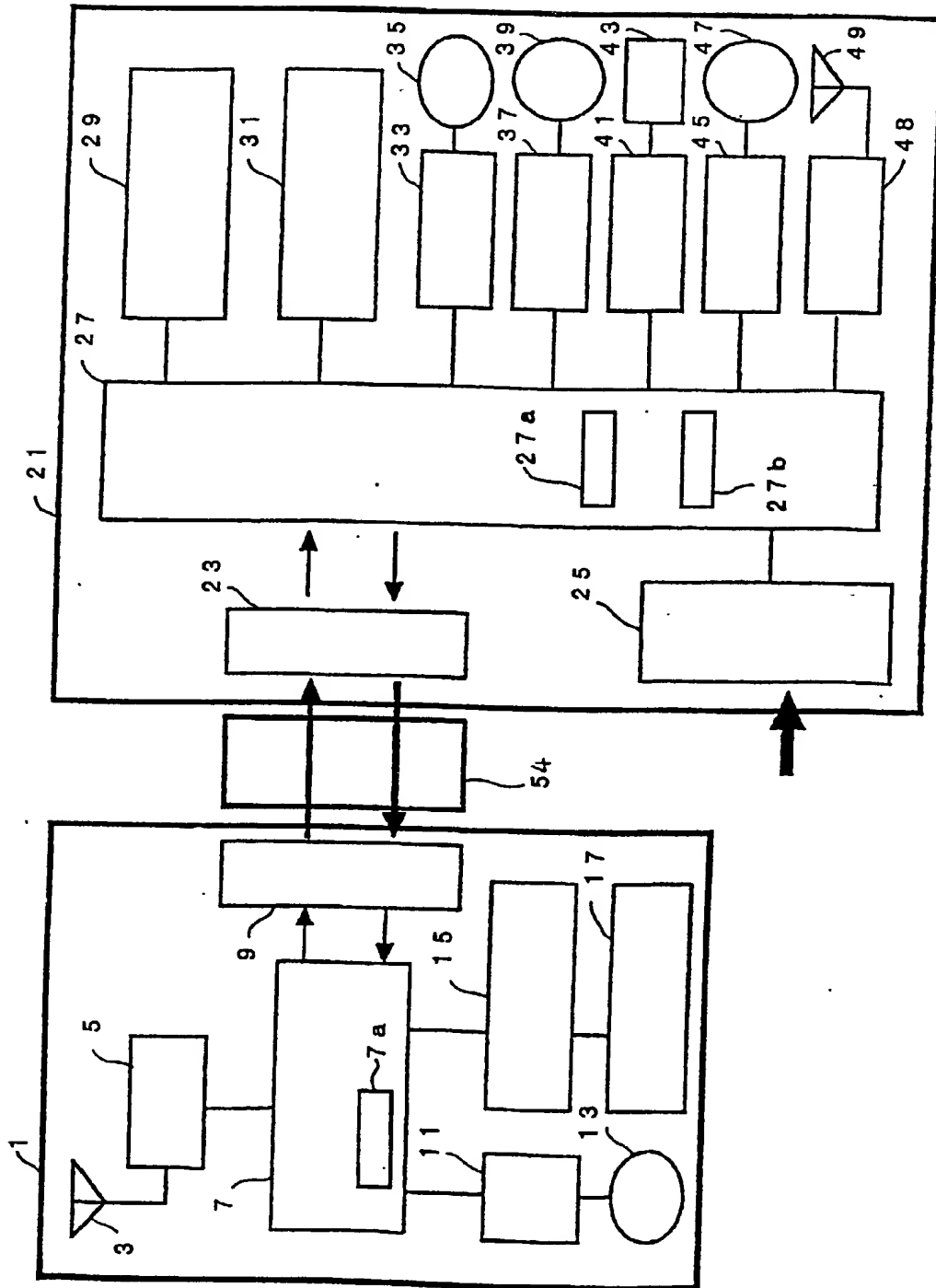


FIG. 2

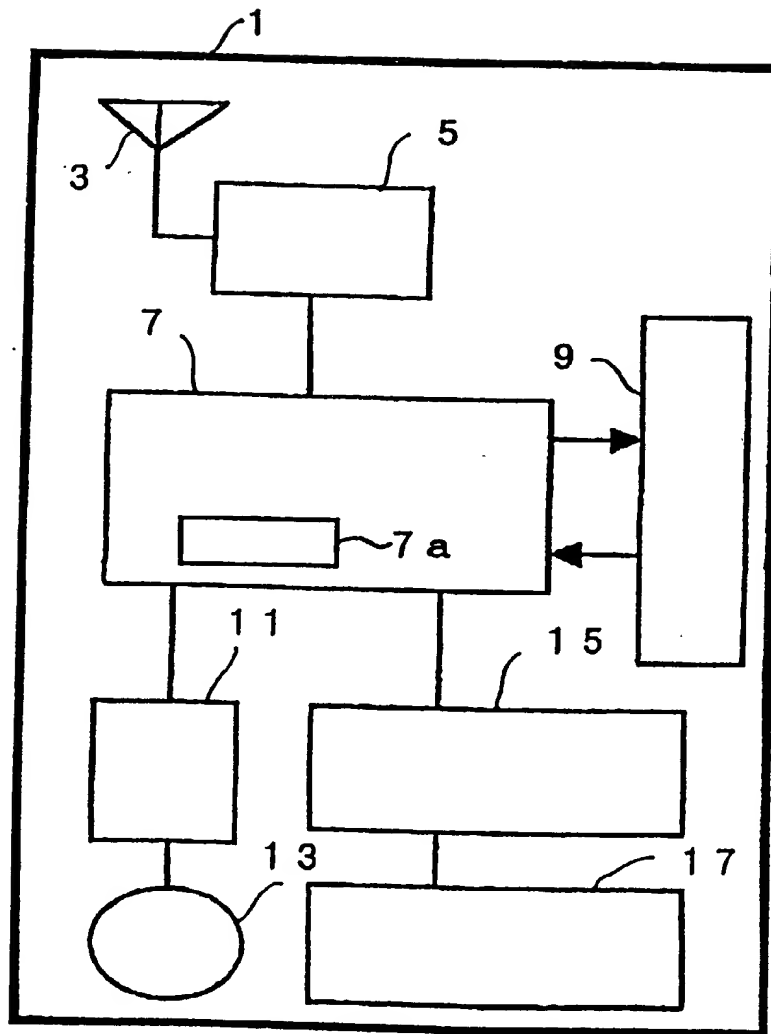


FIG. 3

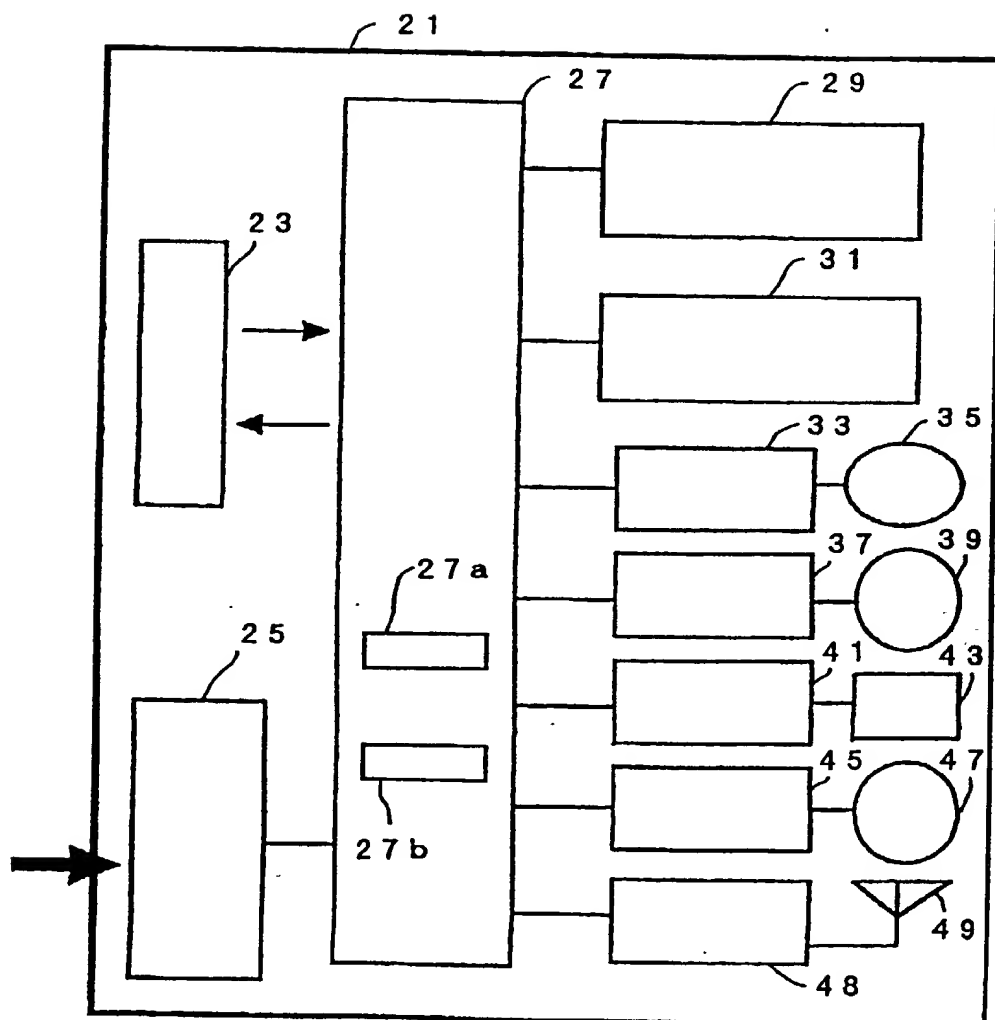


FIG. 4

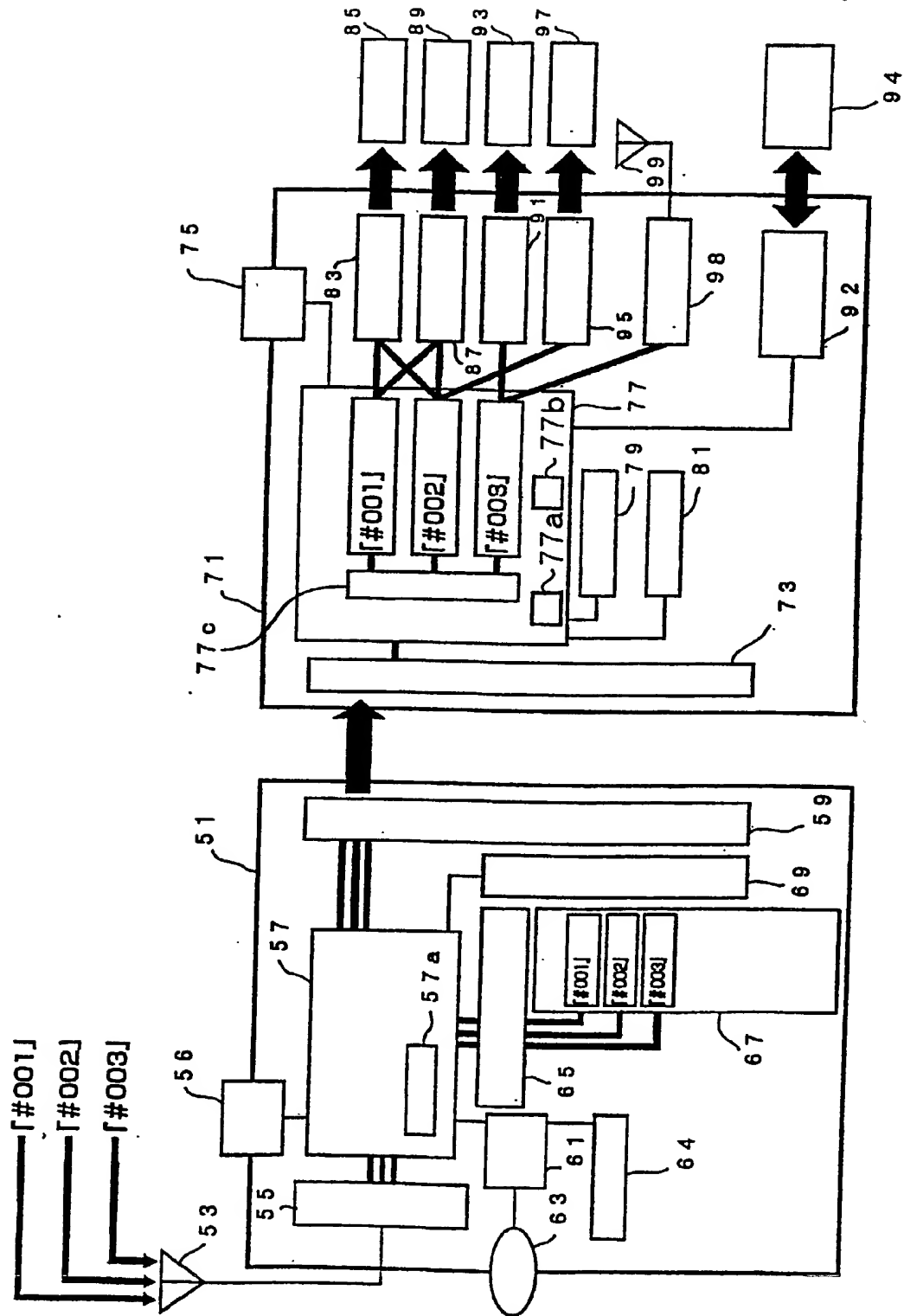


FIG. 5

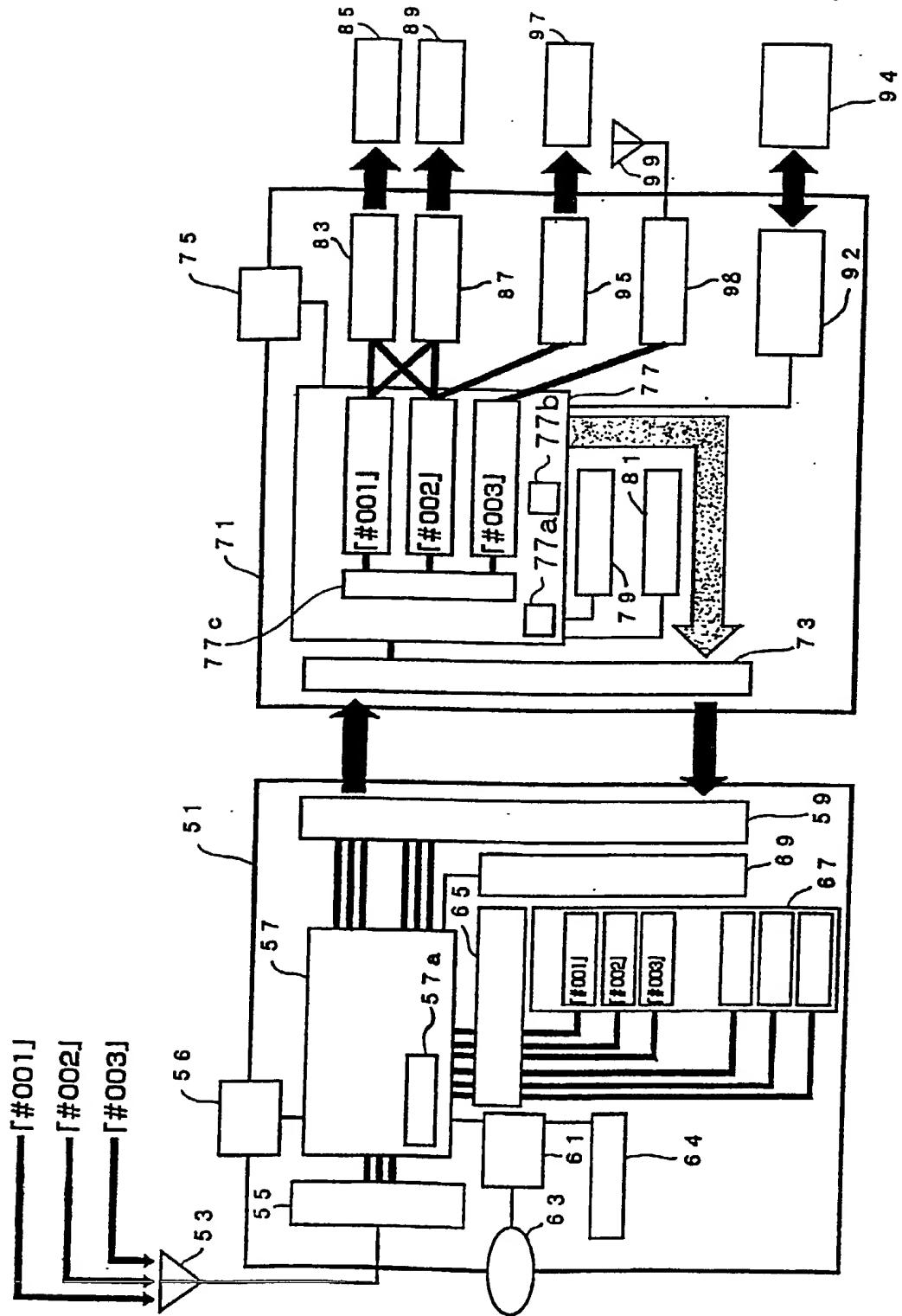


FIG. 6

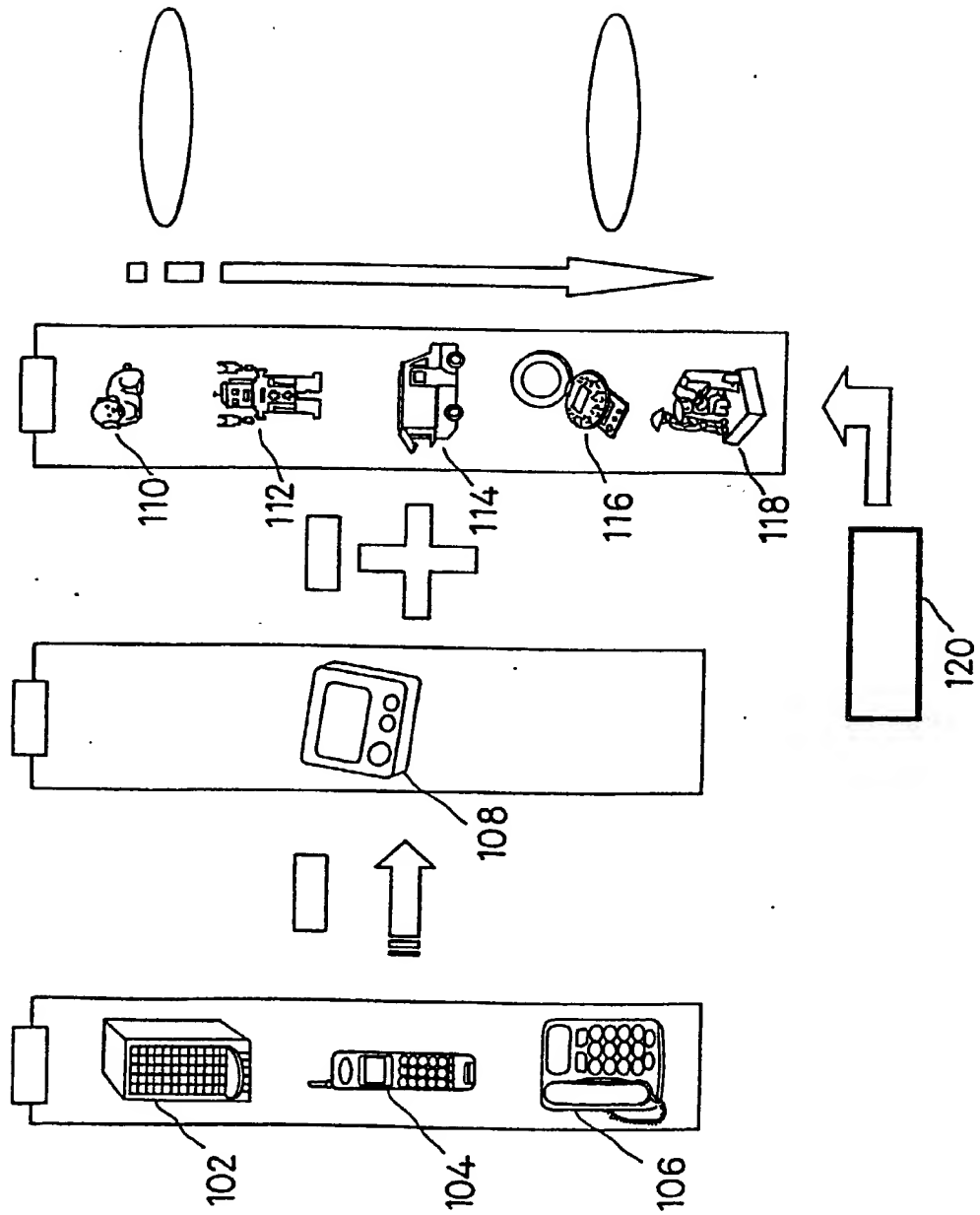
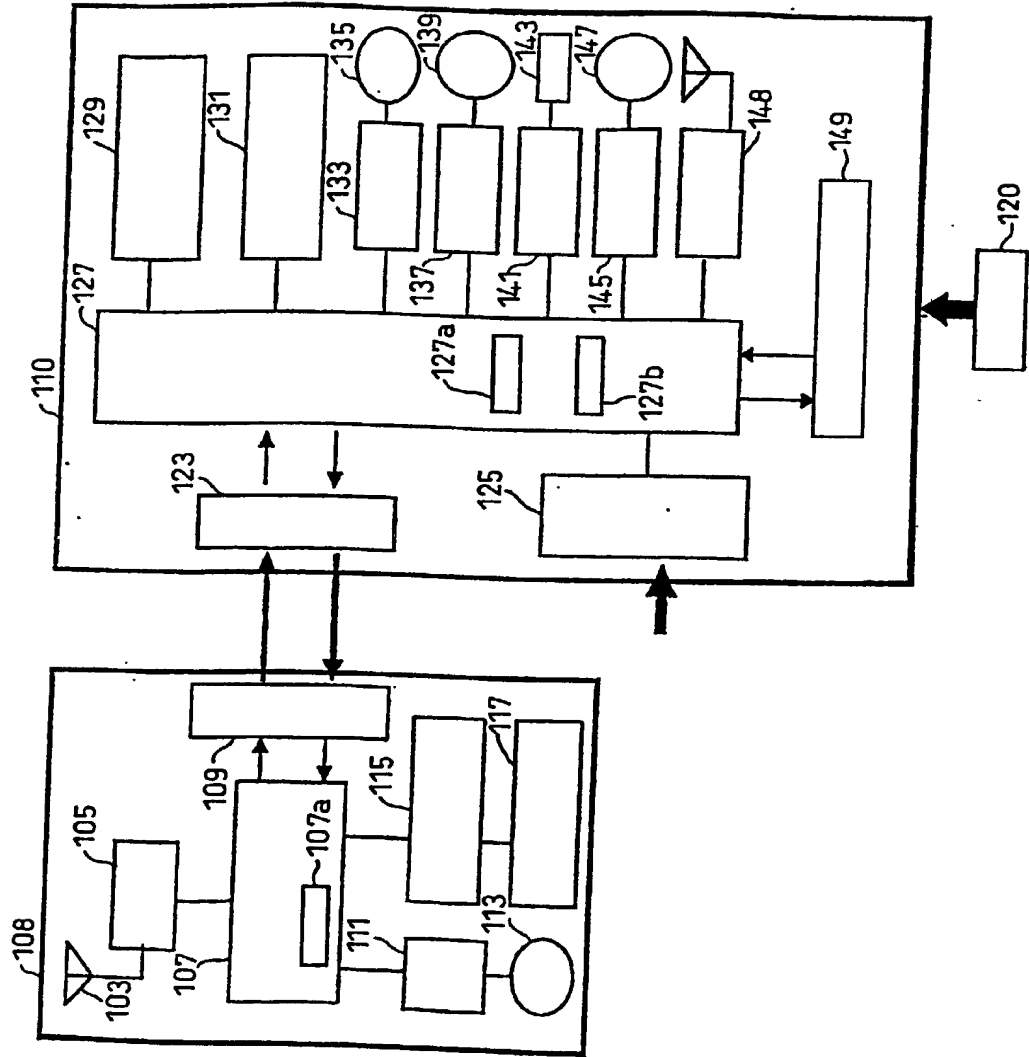


FIG. 7







## Declaration and Power of Attorney For Patent Application

特許出願宣言書及び委任状

## Japanese Language Declaration

日本語宣言書

下記の氏名の発明者として、私は以下の通り宣言します。

As a below named inventor, I hereby declare that:

私の住所、私書箱、国籍は下記の私の氏名の後に記載された通りです。

My residence, post office address and citizenship are as stated next to my name.

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者であると（下記の名称が複数の場合）信じています。

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Electronic Appliance

上記発明の明細書（下記の欄でx印がついていない場合は、本書に添付）は、

the specification of which is attached hereto unless the following box is checked:

☐ 月 日に提出され、米国出願番号または特許協定条約国際出願番号を \_\_\_\_\_ とし、  
（該当する場合） \_\_\_\_\_ に訂正されました。

☒ was filed on 15/07/99  
as United States Application Number or  
PCT International Application Number  
PCT/JP99/03827 and was amended on  
\_\_\_\_\_ (if applicable).

私は、特許請求範囲を含む上記訂正後の明細書を検討し、内容を理解していることをここに表明します。

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

私は、連邦規則法典第37編第1条56項に定義されるとおり、特許資格の有無について重要な情報を開示する義務があることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

# Japanese Language Declaration (日本語宣言書)

私は、米国法典第35編119条(a)-(d)項又は365条(b)項に基づき下記の、米国以外の国の少なくとも一カ国を指定している特許協力条約365(a)項に基づき国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している、本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。

## Prior Foreign Application(s)

外国での先行出願

|                  |                   |
|------------------|-------------------|
| (Number)<br>(番号) | (Country)<br>(国名) |
| (Number)<br>(番号) | (Country)<br>(国名) |

私は、第35編米国法典119条(e)項に基づいて下記の米国特許出願規定に記載された権利をここに主張いたします。

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| (Application No.)<br>(出願番号) | (Filing Date)<br>(出願日) |
|-----------------------------|------------------------|

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|                             |                        |
|-----------------------------|------------------------|
| (Application No.)<br>(出願番号) | (Filing Date)<br>(出願日) |
| (Application No.)<br>(出願番号) | (Filing Date)<br>(出願日) |

私は、私自身の知識に基づいて本宣言書中で私が行なう表明が真実であり、かつ私の入手した情報と私の信じることに基づき表明が全て真実であると信じていること、さらに故意になされた虚偽の表明及びそれと同等の行為は米国法典第18編第1001条に基づき、罰金または拘禁、もしくはその両方により処罰されること、そしてそのような故意による虚偽の声明を行なえば、出願した、又は既に許可された特許の有効性が失われることを認識し、よってここに上記のごとく宣誓を致します。

I hereby claim foreign priority under Title 35, United States Code, Section 119 (a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Not Claimed

優先権主張なし

|                                   |                          |
|-----------------------------------|--------------------------|
| (Day/Month/Year Filed)<br>(出願年月日) | <input type="checkbox"/> |
| (Day/Month/Year Filed)<br>(出願年月日) | <input type="checkbox"/> |

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

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|-----------------------------|------------------------|
| (Application No.)<br>(出願番号) | (Filing Date)<br>(出願日) |
|-----------------------------|------------------------|

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of application.

|   |
|---|
| (Status: Patented, Pending, Abandoned)<br>(現況: 特許許可済、係属中、放棄済) |
| (Status: Patented, Pending, Abandoned)<br>(現況: 特許許可済、係属中、放棄済) |

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

## Japanese Language Declaration

(日本語宣言書)

委任状： 私は下記の発明者として、本出願に関する一切の手続きを米特許商標局に対して遂行する弁理士または代理人として、下記の者を指名いたします。(弁護士、または代理人の氏名及び登録番号を明記のこと)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith (list name and registration number)

MITCHELL P. BROOK, Reg. No. 32,967, DAVID I. ROCHE, Reg. No. 30,767, ANTOINETTE F. KONSKI, Reg. No. 34,202, MOSES MARES, Reg. No. 40,716, JOHN G. FLAIM, Reg. No. 37,323, all attorneys with the firm of BAKER & MCKENZIE, which has an office address at 101 West Broadway, San Diego, CA 92101.

書類送付先

Send Correspondence to:

Mitchell P. Brook  
Baker & McKenzie  
101 West Broadway, 12th Floor  
San Diego, California 92101-3890

直接電話連絡先: (名前及び電話番号)

Direct Telephone Calls to: (name and telephone number)

Mitchell P. Brook  
(619) 236-1441

|             |   |              |
|-------------|---|--------------|
| 唯一または第一発明者名 | Full name of sole or first inventor                           |              |
| 1-0         | MIZUKAMI, Tatsuhiko   |              |
| 発明者の署名      | Inventor's signature  | Date         |
| H付          | Mizukami, Tatsuhiko   | Jan 26, 2001 |
| 住所          | Residence   |              |
|             | Tokyo, Japan JPX  |              |
| 国籍          | Citizenship   |              |
|             | Japanese  |              |
| 私書箱         | Post Office Address   |              |
|             | c/o Kabushiki Kaisha Bandai, 5-4, Komagata 2-chome, Taito-ku, |              |
|             | Tokyo, Japan  |              |
| 第二共同発明者     | Full name of second joint inventor, if any                    |              |
|             | HAGA, Yoshinori   |              |
| 第二共同発明者     | Second inventor's signature                                   | Date         |
| H付          | Haga Yoshinori  | Jan 26, 2001 |
| 住所          | Residence   |              |
|             | Tokyo, Japan JPX  |              |
| 国籍          | Citizenship   |              |
|             | Japanese  |              |
| 私書箱         | Post Office Address   |              |
|             | c/o Kabushiki Kaisha Bandai, 5-4, Komagata 2-chome, Taito-ku, |              |
|             | Tokyo, Japan  |              |

(第三以降の共同発明者についても同様に記載し、署名をすること)

(Supply similar information and signature for third and subsequent joint inventors.)

**Japanese Language Declaration**  
(日本語宣言書)

|                              |                                  |   |               |
|------------------------------|----------------------------------|---|---------------|
| 第 共同発明者                      |                                  | Full name of 3rd Joint Inventor, if any |               |
| 30                           |                                  | SHIMIZU, Takeshi                        |               |
| 発明者の署名                       | 日付                               | Inventor's signature                    | Date          |
|                              |                                  | Shimizu Takeshi                         | Jan. 26, 2001 |
| 住所                           | Residence                        |   |               |
|                              | Tokyo, Japan                     |   |               |
| 国籍                           | Citizenship                      |   |               |
|                              | Japanese                         |   |               |
| 私書箱                          | Post Office Address              |   |               |
| c/o Kabushiki Kaisha Bandai, | 5-4, Komagata 2-chome, Taito-ku, |   |               |
| Tokyo, Japan                 |                                  |   |               |
| 第 共同発明者                      |                                  | Full name of Joint Inventor, if any     |               |
|                              |                                  |   |               |
| 発明者の署名                       | 日付                               | Inventor's signature                    | Date          |
|                              |                                  |   |               |
| 住所                           | Residence                        |   |               |
|                              |                                  |   |               |
| 国籍                           | Citizenship                      |   |               |
|                              |                                  |   |               |
| 私書箱                          | Post Office Address              |   |               |
|                              |                                  |   |               |
| 第 共同発明者                      |                                  | Full name of Joint Inventor, if any     |               |
|                              |                                  |   |               |
| 発明者の署名                       | 日付                               | Inventor's signature                    | Date          |
|                              |                                  |   |               |
| 住所                           | Residence                        |   |               |
|                              |                                  |   |               |
| 国籍                           | Citizenship                      |   |               |
|                              |                                  |   |               |
| 私書箱                          | Post Office Address              |   |               |
|                              |                                  |   |               |

(第 以降の共同発明者についても同様に記載し、署名をすること。)

(Supply similar information and signature for  
Joint Inventors.)

subsequent